

WHAT IS CLAIMED IS:

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1. A software update device capable of communicating with a target update device via a network, the software update device comprising:

a certification information setting unit for  
10 generating a first certification information, and transmitting the first certification information to the target update device via a first communication path;

· a certification requesting unit for  
transmitting a second certification information to the  
15 target update device, and requesting the target update  
device to execute a certification process with the first  
and second certification information; and

a transmitting unit for transmitting an update  
software for updating a software of the target update  
20 device to the target update device via a second  
communication path when the certification process  
succeeds, the second communication path having a process  
load less than that of the first communication path.

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2. The software update device as claimed in  
claim 1, further comprising a certification information  
5 invalidation requesting unit for requesting the target  
update device to invalidate the first certification  
information subsequent to the transmittal of the update  
software.

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3. The software update device as claimed in  
claim 1, wherein the software of the target update  
15 device is updated when requested by an external unit.

20 4. The software update device as claimed in  
claim 3, further comprising a notification unit for  
notifying a result of updating the software of the  
target update device to the external unit.

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5. The software update device as claimed in  
claim 1, wherein the first communication path is a  
5 communication path for communicating by using SSL.

10 6. The software update device as claimed in  
claim 1, wherein the second communication path is a  
communication path for communicating by using FTP.

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7. The software update device as claimed in  
claim 1, wherein data transmitted via the first  
communication path is encoded, wherein data transmitted  
20 via the second communication path is not encoded.

25 8. A software update system comprising:

a software update device; and  
a target update device in communication with  
the software update device;

wherein the software update device has:

5           a certification information setting unit  
for generating a first certification information, and  
transmitting the first certification information to a  
target update device via a first communication path,

10          a certification requesting unit for  
transmitting a second certification information to the  
target update device, and requesting the target update  
device to execute a certification process with the first  
and second certification information, and

15          a transmitting unit for transmitting an  
update software for updating a software of the target  
update device to the target update device via a second  
communication path when the certification process  
succeeds, the second communication path having a process  
load less than that of the first communication path;

20          wherein the target update device has:

              a memory unit for storing the first  
certification information,

              a certification unit for executing the  
certification process by using the first and second  
25         certification information when requested to execute the

certification process, and returning a result of the certification process to the software update device, and  
an updating unit for receiving the update software when the certification process succeeds, and  
5 updating the software of the target update device.

10                 9. The software update system as claimed in  
claim 8, wherein the software update device further has  
a certification information invalidation requesting unit  
for transmitting an invalidation request to invalidate  
the first certification information to the target update  
15 device subsequent to the transmittal of the update  
software, and wherein the target update device further  
has a certification information invalidating unit for  
invalidating the first certification information when  
receiving the invalidation request.

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10. The software update system as claimed in  
25 claim 8, wherein the target update device further has:

a restarting unit for restarting the target update device after the software is updated by the updating unit,

5 a start notification transmitting unit for transmitting a start notification informing that the target update device is started to the software update device when the target update device is started, and

10 a version information transmitting unit for transmitting version information of the target update device in response to a request from the software update device;

15 wherein the software update device further has a version information unit for obtaining the version information by requesting the target update device to transmit the version information when the start notification is received after the transmittal of the update software, and confirming the update by comparing with version information of the transmitted update software.

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11. The software update system as claimed in  
25 claim 8, wherein the first communication path is a

communication path for communicating by using SSL.

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12. The software update system as claimed in  
claim 8, wherein the second communication path is a  
communication path for communicating by using FTP.

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13. The software update system as claimed in  
claim 8, wherein data transmitted via the first  
15 communication path is encoded, wherein data transmitted  
via the second communication path is not encoded.

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14. A software update method using a software  
update device capable of communicating with a target  
update device via a network, the method comprising the  
steps of:

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generating a first certification information;

transmitting the first certification information to the target update device via a first communication path;

transmitting a second certification information to the target update device;

requesting the target update device to execute a certification process with the first and second certification information; and

transmitting an update software for updating a software of the target update device to the target update device via a second communication path when the certification process succeeds, the second communication path having a process load less than that of the first communication path.

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15. The software update method as claimed in claim 14, further comprising a step of requesting the target update device to invalidate the first certification information subsequent to the transmittal of the update software.

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16. The software update method as claimed in  
claim 14, wherein the software of the target update  
5 device is updated when requested by an external unit.

10 17. The software update device as claimed in  
claim 16, further comprising a step of notifying a  
result of updating the software of the target update  
device to the external unit.

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18. The software update method as claimed in  
claim 14, further comprising the steps of:  
20 receiving a start notification informing that  
the target update device is started;  
obtaining version information of the software  
of the target update device from the target update  
device when the start notification is received after the  
25 transmittal of the update software; and

confirming the update by comparing with  
version information of the transmitted update software.

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19. The software update method as claimed in  
claim 14, wherein the first communication path is a  
communication path for communicating by using SSL.

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20. The software update method as claimed in  
15 claim 14, wherein the second communication path is a  
communication path for communicating by using FTP.

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21. The software update method as claimed in  
claim 14, wherein data transmitted via the first  
communication path is encoded, wherein data transmitted  
via the second communication path is not encoded.

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22. A program to be installed or executed by  
5 a computer for controlling a software update device  
capable of communicating with a target update device via  
a network, the program comprising:  
          a generating function for generating a first  
certification information;  
10          a transmitting function for transmitting the  
first certification information to the target update  
device via a first communication path;  
          a transmitting function for transmitting a  
second certification information to the target update  
15 device;  
          a requesting function for requesting the  
target update device to execute a certification process  
with the first and second certification information; and  
          a transmitting function for transmitting an  
20 update software for updating a software of the target  
update device to the target update device via a second  
communication path when the certification process  
succeeds, the second communication path having a process  
load less than that of the first communication path.

23. The program as claimed in claim 22,  
5 further comprising a function of requesting the target  
update device to invalidate the first certification  
information subsequent to the transmittal of the update  
software.

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24. The program as claimed in claim 22,  
wherein the software of the target update device is  
15 updated when requested by an external unit.

20           25. The program as claimed in claim 24,  
further comprising a step of notifying a result of  
updating the software of the target update device to the  
external unit.

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26. The program as claimed in claim 22,  
further comprising the functions of:

5           a receiving function for receiving a start  
notification informing that the target update device is  
started;

10          an obtaining function for obtaining version  
information of the software of the target update device  
from the target update device when the start  
notification is received after the transmittal of the  
update software; and

15          a confirming function for confirming the  
update by comparing with version information of the  
transmitted update software.

20          27. The program as claimed in claim 22,  
wherein the first communication path is a communication  
path for communicating by using SSL.

28. The program as claimed in claim 22,  
wherein the second communication path is a communication  
path for communicating by using FTP.

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29. The program as claimed in claim 22,  
10 wherein data transmitted via the first communication  
path is encoded, wherein data transmitted via the second  
communication path is not encoded.

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30. A communication device capable of  
communicating with a software update device via a  
network, the communication device comprising:  
20 a certification information setting unit for  
generating a first certification information, and  
transmitting the first certification information to the  
software update device;  
a certifying unit for executing a  
25 certification process, when receiving a second

certification information from the software update device, by comparing the first and second certification information; and

an updating unit for receiving an update  
5 software for updating a software of the communication device from the software update device via a second communication path when the certification process succeeds, and updating the software of the communication device, the second communication path having a process  
10 load less than that of the first communication path.

15 31. The communication device as claimed in claim 30, further comprising a certification information invalidating unit for invalidating the first certification information subsequent to the transmittal of the update software.

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32. The communication device as claimed in  
25 claim 30, further comprising a control part for

instructing update of the software of the communication device.

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33. The communication device as claimed in claim 30, further comprising:

a restarting unit for restarting the  
10 communication device after the software is updated;  
a start notification transmitting unit for transmitting a start notification informing that the communication device is started to the software update device when the communication device is started, and  
15 a version information transmitting unit for transmitting version information of the communication device in response to a request from the software update device after the start after the transmittal of the start notification.

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34. The communication device as claimed in  
25 claim 30, wherein the first communication path is a

communication path for communicating by using SSL.

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35. The communication device as claimed in  
claim 30, wherein the second communication path is a  
communication path for communicating by using FTP.

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36. The communication device as claimed in  
claim 30, wherein data transmitted via the first  
15 communication path is encoded, wherein data transmitted  
via the second communication path is not encoded.

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37. A software update system comprising:  
a communication device; and  
a software update device in communication with  
the communication device;  
25 wherein the communication device has:

a certification information setting unit for generating a first certification information, and transmitting the first certification information to the software update device,

5               a certifying unit for executing a certification process, when receiving a second certification information from the software update device, by comparing the first and second certification information, and

10              an updating unit for receiving an update software for updating a software of the communication device from the software update device via a second communication path when the certification process succeeds, and updating the software of the communication 15 device, the second communication path having a process load less than that of the first communication path;

                wherein the software update device has:

                a memory unit for storing the first certification information,

20              a certification requesting unit for transmitting the second certification information to the communication device, and requesting the communication device to execute the certification process with the first and second certification information, and

25              a transmitting unit for transmitting the

update software to the communication device via the second communication path when the certification process succeeds.

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38. The software update system as claimed in claim 37, wherein the communication device further has a  
10 certification information invalidating unit for invalidating the first certification information subsequent to the transmittal of the update software.

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39. The software update system as claimed in claim 37, wherein the communication device further has:  
a restarting unit for restarting the  
20 communication device after the software is updated,  
a start notification transmitting unit for transmitting a start notification informing that the communication device is started to the software update device when the communication device is started, and  
25 a version information transmitting unit for

transmitting version information of the communication device in response to a request from the software update device;

wherein the software update device further has  
5 a version information unit for obtaining the version information by requesting the communication device to transmit the version information when the start notification is received after the transmittal of the update software, and confirming the update by comparing  
10 with version information of the transmitted update software.

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40. The software update system as claimed in claim 37, wherein the first communication path is a communication path for communicating by using SSL.

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41. The software update system as claimed in claim 37, wherein the second communication path is a  
25 communication path for communicating by using FTP.

5           42. The software update system as claimed in  
claim 37, wherein data transmitted via the first  
communication path is encoded, wherein data transmitted  
via the second communication path is not encoded.

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15         43. A software update method using a  
communication device capable of communicating with a  
software update device via a network, the method  
comprising the steps of:

20           generating a first certification information;  
transmitting the first certification  
information to the software update device;  
executing a certification process, when  
receiving a second certification information from the  
software update device, by comparing the first and  
second certification information;  
25           receiving an update software for updating a  
software of the communication device from the software

update device via a second communication path when the certification process succeeds; and

5 updating the software of the communication device, the second communication path having a process load less than that of the first communication path.

10 44. The software update method as claimed in claim 43, further comprising a step of invalidating the first certification information subsequent to the transmittal of the update software.

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20 45. The software update method as claimed in claim 43, further comprising a step of updating the software in response to an instruction to update the software from a control part.

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46. The software update method as claimed in  
claim 43, further comprising the steps of:

    restarting the communication device after the  
software is updated;

5           transmitting a start notification informing  
that the communication device is started to the software  
update device when the communication device is started;  
and

    transmitting version information of the  
10 communication device in response to a request from the  
software update device after the start after the  
transmittal of the start notification.

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47. The software update method as claimed in  
claim 43, wherein the first communication path is a  
communication path for communicating by using SSL.

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48. The software update method as claimed in  
25 claim 43, wherein the second communication path is a

communication path for communicating by using FTP.

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49. The software update method as claimed in  
claim 43, wherein data transmitted via the first  
communication path is encoded, wherein data transmitted  
via the second communication path is not encoded.

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50. A program to be installed or executed by  
15 a computer for controlling a communication device  
capable of communicating with a software update device  
via a network, the program comprising:

a generating function for generating a first  
certification information;

20 a transmitting function for transmitting the  
first certification information to the software update  
device;

an executing function for executing a  
certification process, when receiving a second  
25 certification information from the software update

device, by comparing the first and second certification information;

a receiving function for receiving an update software for updating a software of the communication device from the software update device via a second communication path when the certification process succeeds; and

an updating function for updating the software of the communication device, the second communication path having a process load less than that of the first communication path.

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51. The program as claimed in claim 50, further comprising a function of invalidating the first certification information subsequent to the transmittal of the update software.

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52. The program as claimed in claim 50,  
25 further comprising a function of updating the software

in response to an instruction to update the software from a control part.

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53. The program as claimed in claim 50,  
further comprising:

a restarting function for restarting the  
10 communication device after the software is updated;  
a transmitting function for transmitting a  
start notification informing that the communication  
device is started to the software update device when the  
communication device is started; and  
15 a transmitting function for transmitting  
version information of the communication device in  
response to a request from the software update device  
after the start after the transmittal of the start  
notification.

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54. The program as claimed in claim 50,  
25 wherein the first communication path is a communication

path for communicating by using SSL.

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55. The program as claimed in claim 50,  
wherein the second communication path is a communication  
path for communicating by using FTP.

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56. The program as claimed in claim 50,  
wherein data transmitted via the first communication  
15 path is encoded, wherein data transmitted via the second  
communication path is not encoded.

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